(Forest Series No. 3.)
(Timbers.)

THE

AGRICULTURAL LEDGER.

1897—No. 14.

TECTONA GRANDIS.

(TEAK.)

[*DICTIONARY OF ECONOMIC PRODUCTS, Vol. VI., Pt. IV., T. 232-67.*]

PRODUCTION OF AND TRADE IN TEAK WOOD.

"*Report and Working Scheme of the Nilambúr Teak Plantations,*" *by* P. M. LUSHINGTON, ESQ., *Deputy Conservator of Forests. Review of certain passages by* THE EDITOR.

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NILAMBUR PLANTATIONS.

Mr. P. M. Lushington's *Report on the Nilambúr Plantations* (published under cover of Resolution No. 258 of the 10th June 1896 by the Madras Board of Revenue) will doubtless (by those interested in the production of and trade in TEAK WOOD) be regarded as a valuable contribution to the literature of the subject, besides being an instructive essay on the Commercial Aspects of Timber Plantations generally. The following passages may, therefore, be abstracted as exemplifying some of the more practical conclusions arrived at by Mr. Lushington :—

Suggestion of their Formation, 1840.

History.—"The Nilambúr teak plantations were first suggested in 1840 by Mr. Conolly, Collector of Malabar, who described their object as being to replace those forests which have vanished from private carelessness and rapacity—a work too new, too extensive and too barren of early return to be ever taken up by the native proprietor.

"The plantations owed their existence to the accident that one of the many religious bodies holding temple lands happened to be in want of funds and to own blocks of land scattered here and there in

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this valley, many of which constituted the very best sites for planting that could have been selected had the whole area been available to choose from.

"At first considerable difficulty was experienced in making the teak seeds germinate and **Mr. Conolly**, in a letter of the 4th August 1842, reported that of 30,000 seeds sown, none had come up, and that of 10,000 saplings transplanted, more than half had died. At the end of 1843, the true method was suggested by **Dr. Roxburgh**, and this method, with a few slight modifications, is continued up to the present day."

Position: Climate: Soil (p. 41).—"The plantations lie in the Nilambúr valley surrounded by hills of Sisapara on the south-east, the Wynaad (S.E.) on the north-east, and the Camel's Hump on the north-west side. The plantations all lie in the Nilambúr range of South Malabar District." "The distinguishing characteristic of the Nilambúr climate is its damp heat so favourable to rapid growth. The temperature in shade ranges from 75° to 95°. The average rainfall for the past ten years is 94·5 inches." **Mr. Lushington** explains that the soil of the plantation is very varied, alluvium overlying gneiss rock or laterite derived from the hills. The observation has been recorded that the teak growing on alluvial soils was of first class; that on laterite, second class. Further, that damp alluvial soils were not favourable, though these were improvable by drainage.

Demands for Produce (pages 45–47).—"The teak plantations yield marketable products of three kinds:—

Final Crop.

(1) The timber which will be furnished by the final crop and also during the later thinnings.—For this, there is a large demand, and there is no doubt that all this first-class timber will sell at a very large rate. The superiority of Malabar teak is so well known that it is probable much of this timber will go into the Bombay, and even into European markets. At present, however, there is no doubt that the best prices will be given by the Arabs who require it for their ship-building in lengths as long as possible, so that the plantation teak is specially suited to their requirements. At present really good Malabar teak is selling at R3-8 to R4 per cubic foot in Calicut, whilst Burmah teak in Bombay only realizes R2 or a little more. At present the Arabs obtain their supplies from Cochin and Travancore, but the teak they obtain is inferior, and there is no doubt that, when the plantation becomes

Prices.

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exploitable, the whole of this demand will fall on them. There is nothing to show that there is any limit to the demand for teak of this size and quality, and it is unlikely that the price of this teak, as it stands will ever become less than R2-8 to R3 per cubic foot."

Saplings.

(2). "***Teak saplings.***—They are divided into seven classes (1) measurables, (2) superior (small), then first, second, third, fourth and fifth classes. The first two classes are bought by Parsee merchants and Cutch traders. The timber of this class is usually exported to Bhowanagger, where it is used as beams for house building by the more well-to-do people. The price realized for this timber is decidedly good, averaging R2 per foot, but it seems doubtful whether there is a very large demand for such timber. The other classes of saplings are bought by the same traders and exported to different parts of Bombay, especially Bhowanagger, where there is a constant demand for about 40,000 saplings per annum, which occasionally rises to 60,000, but beyond this there is little or no demand at present. They are cut up and used for the rafters of native houses. The average prices realized for these classes during the last five years are :—

Prices.

	R	*a.*	*p.*	
Measurables	5	11	0	per sapling.
Superior, small . . .	3	4	0	
First class	2	5	0	
Second „	1	5	0	
Third „	0	12	0	
Fourth „	0	7	0	
Fifth „	0	3	0	

The following table shows the number of saplings sold during the last ten years under the old and revised working plan :—

Year.	Number.	Revenue.		
		R	*a.*	*p.*
1885-86	53,562	59,766	8	10
1886-87	...	1,935	6	2
1887-88	49,079	32,441	12	4
1888-89	39,739	29,693	1	7
1889-90	39,560	26,165	9	10
1890-91	50,235	30,072	11	2
1891-92	31,258	24,596	5	2
1892-93	17,845	15,079	11	8
1893-94	22,952	32,044	12	10
1894-95	3,071	27,895	3	3

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	R	
"This includes—In 1893-94, 111 logs (1,124 cubic feet) realizing .	2,072	sold locally.
In 1894-95, 349 logs (7,076 cubic feet) realizing .	12,537	
TOTAL .	14,609	

showing that there is a good demand for the larger timber taken out in thinnings.

"The present market demands special attention to two points:—

Conditions of Timber.

(*i*) That all big timber should be as long as possible, length being the special quality (with good breadth) required by the Arabs.

Girdling destroys the Oil.

(*ii*) That all timber must be cut and exported green and not seasoned or girdled, the reason of this being probably that salt water seasoning is preferable, and girdling destroys the essential oil for which Malabar timber is so celebrated. There is at present no demand for branch wood, so this cannot be taken into consideration in this plan.

Bamboos.

(*3*) "***Bamboos.***—Considerable quantities of bamboos are used yearly to float the saplings. At present only the indigenous bamboos are used and these sell at an average of R10 per hundred in Kallai. These will be replaced by the introduced bamboos from Burmah, when they become fit for cutting, and their large size should render them very valuable. At present, however, it cannot be stated what price they will realize."

Exports.

Employment of Elephants.

"***Lines of export.***—A main road runs close to the plantations into Calicut, but is not used for carting timber which can be transported by water so much more easily. Each block planted is served by one or more small rivers down which floating is possible from July to October and in some instances later. Floating in the main river below Mombat is easy at all times of the year. There are at present 25 young elephants attached to the district. The great majority of those have been caught locally and are being trained and are now doing all the work required of them in dragging the saplings to the river, and some are capable of moving larger logs in the Natural Forest. These will be invaluable when it comes to dragging the large timber in the final exploitations.

"The plantations recently put down have been carefully intersected with narrow roads, which are very valuable for inspection and will serve as drag-roads later. In any future planting, this should be

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attended to, as want of them in places is much felt. In the older compartments this has, to a certain extent, been improved by keeping open the compartment boundary lines as fire lines.

Depots.

"***Depots.***—The only regular depôt is at Kallai, a mile from Calicut, but temporary depôts are made in the forest itself and some of the wood is sold straight from the forest depôt. Sales from the plantation are good and should be encouraged as much as possible, and it may be found practicable later to abolish the Kallai depôt, though this cannot be done now."

Future Treatment.

Proposals for Future-(pp. 67–68).—"It is proposed for the future to treat both the old and new plantations under the same method, *i.e.*, a system of high forest with a clean felling of the final crop and artificial regeneration. The method to be accompanied by thinnings with a view to the improvement of the final crop. The felling to commence not earlier than the year in which the average girth at breast height will be 6 feet 6 inches. The measurements taken show that the centre girth will not be less than 4 feet 6 inches. On first class soils the final crop should consist of not less than 40 trees and on second class of not less than 50 per acre."

Number per acre.

Age 95 years and 140 years.

"***The age of exploitability.***—This has been found out to be 95 years on first class and 140 years on second class soils, as worked out in the appendix."

"As the oldest plantation is only 50 years at present, no scheme for final fellings has been prepared. It has, however, been ascertained by employing the current rate of growth (the growth in the different blocks of plantation does not materially differ). Pannengode is for its age slightly the most advanced, and Amrampolliem is a little behind the others. The final fellings must be spread over a period of at least 50 years."

Yield.

Determination of final yield.—"The total yield per acre on first class soils is 3,000 cubic feet per acre and on second class 2,000 cubic feet per acre.

"The annual yield, if spread over 50 years, will be 147,910 cubic feet of first-class and 73,780 cubic feet of second-class timber. According to the present market, this will fetch not less than R3 per cubic feet standing for first-class and R2 per cubic feet for second class. The total revenue to be derived will therefore be R4,43,730 +1,47,560 = R5,91,290, or, with the net profit derived from miscellaneous sources such as third class bamboos, etc., may safely be fixed at 6 lakhs per annum.

NILAMBUR TEAK PLANTATIONS.

Founded, 1844.

The following passages (*pp. 138—139*) may now be given from the Resolution of the Board of Revenue on submitting **Mr. Lushington's** Report to the Madras Government:—"The plantations were at first started in 1844, but no attempts at systematic thinning were commenced until the year 1885. In that year the then Conservator (**Colonel Campbell Walker**) drew up, in conjunction with **Messrs. Porter** and **Hadfield**, a rough preliminary scheme to last for five years for regulating thinnings. This scheme was in operation until the year 1890-91, when it was revised by the same officer so as to last for another five years ending with 1895-96. (Inspection Report in Board's Proceedings, Forest No. 206, dated the 16th May 1891.)

Working Plan.

"**Colonel Campbell Walker** then suggested that, before the termination of the period covered by the revised scheme, a special officer or officers should be deputed to draw up, from the experience gained by the working of the preliminary schemes, a regular Working plan to provide not only for the thinnings but for final fellings; and in accordance with this suggestion, which was subsequently supported by **Mr. H. A. Gass**, Acting Conservator, in his inspection report embodied in Board's Proceedings, Forest No. 253, dated the 14th April 1894, **Mr. P. M. Lushington** was appointed to prepare the Working plan in question."

"**Mr. Lushington's** Report and Working scheme have been carefully prepared. He has collected much useful information and added to the Working scheme a complete report of the past history of the plantations. He does not, however, make provision in the scheme for final fellings, as the period for such fellings is estimated by him to be still too far off. It was hitherto anticipated that the trees would attain maturity after 60 years, so that the first planting, *viz.*, that of 1844, was expected to be felled in the year 1904. **Mr. Lushington**, after a careful calculation, disproves this theory and fixes the exploitable age at 95 years for first-class soils and 140 years for second-class soils. At this age he estimates that the trees will attain an average centre girth measurement of 4 feet 6 inches, which is the measurement most in demand in the market."

Final Fellings, 1939.

"According to **Mr. Lushington's** proposals, therefore, the final fellings will not commence until the year 1939, when the first planting will have reached its 95th year. In the interval **Mr. Lushington** provides for thinnings, and estimates the annual average yield therefrom at R52,801 during the first five years and R80,247 during the next five years. **Mr. Lushington's** proposals for future treatment have the approval of the Conservator, and the Board resolves to accept them."

T. 232-67.

G. I. C. P. O.—No. 349 R. & A.—29-11-97.—2,200.—R. B.

All communications regarding THE AGRICULTURAL LEDGER should be addressed to the Editor, Dr. George Watt, Reporter on Economic Products to the Government of India, Calcutta.

The objects of this publication (as already stated) are to gradually develop and perfect our knowledge of Indian Agricultural and Economic questions. Contributions or corrections and additions will therefore be most welcome.

In order to preserve a necessary relation to the various Departments of Government, contributions will be classified and numbered under certain series. Thus, for example, papers on Veterinary subjects will be registered under the Veterinary Series; those on Forestry in the Forest Series. Papers of more direct agricultural or industrial interest will be grouped according as the products dealt with belong to the Vegetable or Animal Kingdom. In a like manner, contributions on Mineral and Metallic subjects will be registered under the Mineral Series.

This sheet and the title-page may be removed when the subject-matter is filed in its proper place, according to the letter and number shown at the bottom of each page.